SH03012 MICROBIAL BIOTECHNOLOGY
(CÔNG NGHỆ VI SINH)
Credits 3: Lecture 3 - Practice: 0 - self-study: 9

EXPECTED LEARNING OUTCOMES

Course objective	COURSE EXPECTED LEARNING OUTCOMES After successfully completing this course, students are able to:	Expected learning outcomes of program
Knowledge		
CELO1	Presentation of applications of microbial biotechnology in the fields of agriculture.	ELO4
CELO2	Explain the mechanism of biodegradation of organic compounds by microorganisms, the mechanism of useful microorganisms in cultivation, plant protection, animal husbandry, wastewater and soil treatment	ELO4
CELO3	Analyze the mechanism of decomposition of organic compounds by microorganisms (decomposition of biomass), the process of growth, development, and metabolism of microorganisms in different environmental conditions	ELO4
Skills		
CELO4	Perform group discussion on topics given by the lecturer or contents related to the lesson proposed by the student.	ELO7
	Use appropriate methods and skills to collect, analyze data in scientific research, and examine practical issues at the workplace.	ELO10
Personal autonomy and responsibility		
CELO5	Acitively acquire new knowledge and experience to improve one's professional qualifications. Demonstrate honesty in report, tests, and exams.	ELO15

CONTENT

Chapter 1. Microbial biotechnology: objectives, methods, and applications of microbial biotechnology;

Chapter 2. Biomass Decomposition by microorganisms;

Chapter 3. Fermentation technology;

Chapter 4. Rhizobacteria;

Chapter 5. Microbial fertilizers and microbial products for plant protection;

Chapter 6. Biofilms;

Chapter 7. Biological treatment of wastewater and soil contaminated;

Chapter 8. Prebiotics and probiotics.

STUDENT TASKS

✓ **Attendance:** All students taking this course must attend at least 2/3 of the total theoretical hours of the course, actively participate in discussions.

✓ **Discussion:** discuss the questions that the lecturer raises in the lessons and discussion periods

✓ **Preparing for the lesson:** All students attending this course must prepare for the lesson according to the learning plan given by the lecturer.

✓ **Mid-term exam**: Students who do not take the midterm exam will be given a score of zero.

✓ **Final exam**: All students taking this course must take the final exam

✓ For online learning: Students need to install online learning software and fulfill the requirements for online learning.

ASSESSMENT METHODS

• Grade: 10 marks

• The average mark of the course is the sum of the rubric marks after multiplied by the respective ratio of each rubric

• Attendance: 10%

• Mid-team exam: 30%, writing or test quiz.

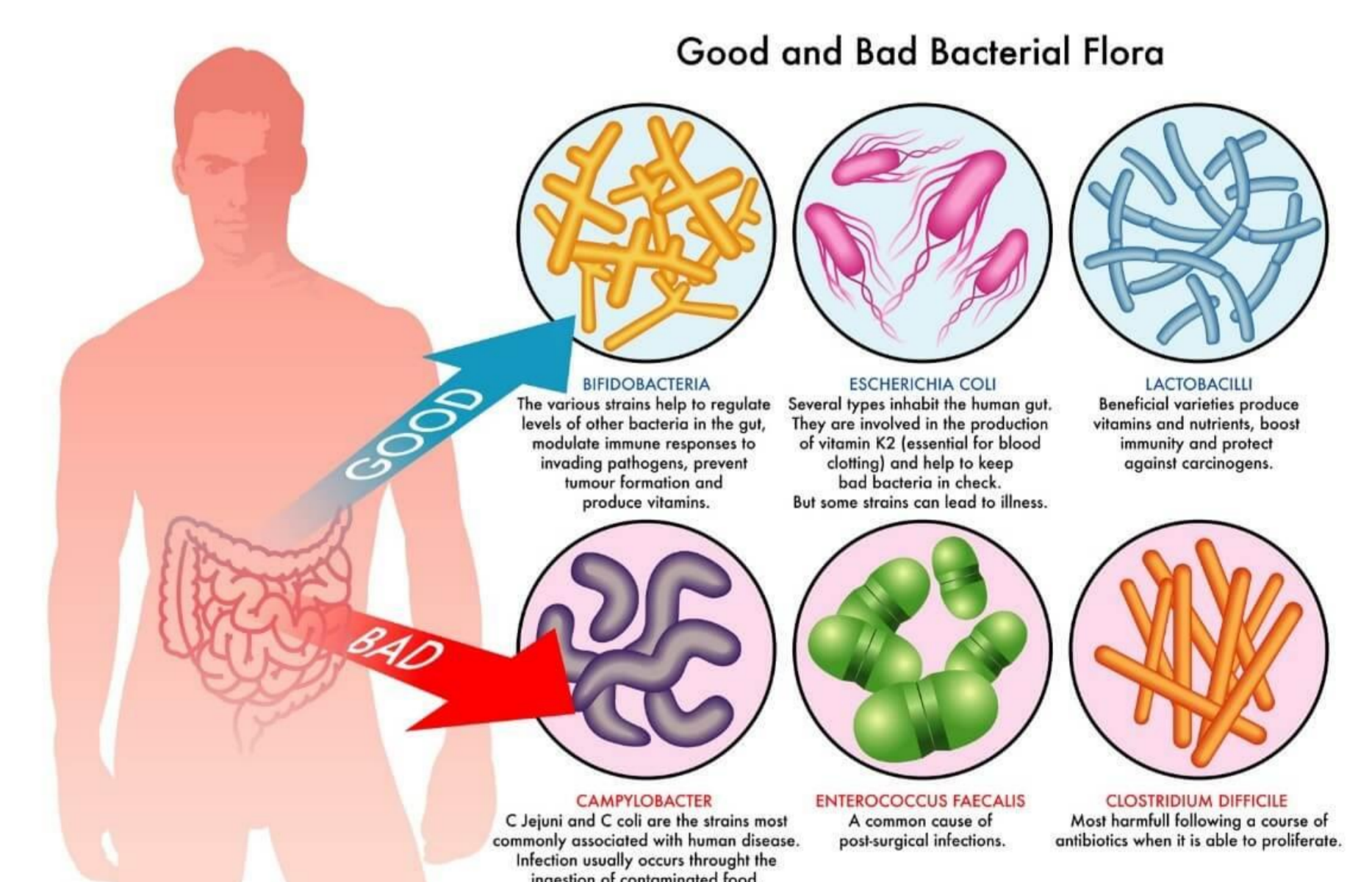• Final exam/: 60%: writing or test quiz.

TEACHING METHODS

✓ Lecturers will teach theoretical lessons using presentations, oral communication and illustration methods; guide students to discuss in groups

✓ Blended learning: Teaching through the E-learning system

LEARNING METHODS

✓ Students read class materials by themselves, prepare for the lessons based on the learning plan given by the lecturers before going to class, listen to the lectures, learn through the E-learning system.

✓ Students participate in learning activities in class: answering questions, doing exercises, discussing in groups.

Good and Bad Bacterial Flora

LECTURERS

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